Space Weather Forecast

Issued on Saturday, 03 August 2024 at 13:13 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate flares expected, chance of Strong flares and of exceeding S1/Minor Radiation Storm threshold. Glancing Coronal Mass Ejection influence Days 1-2 (03-04 Aug), chance of G1-G2/Minor-Moderate Geomagnetic Storms.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity is Moderate, with multiple low level Moderate-class flares observed from across the disc. An active disc, with twelve sunspot regions currently on the visible disc. Three regions remain clustered close together in the southwestern disc. two of which are still in very close proximity, with magnetic complexity still visible. These regions are increasingly difficult to analyse as they approach the limb. Two regions in the southeast have some magnetic complexity, with a third still difficult to analyse near the limb. Two regions in the northeast have been declining slightly. All other regions appear generally stable at present.
A large lift-off was observed at 02/1840 UTC near south-centre disc, but appears to have been re-absorbed. No other Earth directed Coronal Mass Ejections (CMEs) have been observed in the past 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind has declined down to background levels. Wind speeds were initially near 400 km/s, declining to around 360 km/s. The Interplanetary Magnetic Field was weak throughout, with the north-south component also varying weakly. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels.

Four-Day Space Weather Forecast Summary
Solar Activity: Moderate to High activity forecast to continue, with occasional Moderate class flares expected and a chance of isolated Strong flares.

Solar Wind /Geomagnetic Activity: The shock from a CME originating from the southwest of the disc at 01/0709UTC is likely to give Earth some glancing influence later on Day 1 into Day 2 (03-04 Aug). Due to the large number of coincident CMEs in recent days, further arrivals cannot be ruled out through the period.
No coronal hole fast wind enhancements are expected during the period, with CME arrivals expected to be the main factor of interest. Geomagnetic activity is expected to be generally Quiet to Unsettled, with periods of Active to G1/Minor Storms and a slight chance of G2/Moderate Storms should any CME arrivals bring more than a glancing blow. In the absence of further CME influence, activity is likely to become mostly Quiet later in the period.

Energetic Particles / Solar Radiation: Solar radiation is currently at background levels, but with a chance of exceeding the S1/Minor Solar Radiation Storm level in response to larger flares from the western disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	50	30	5	5
Strong	G3	No	2	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	90	80	70	70
Very Active	R3 to R5 X	No	25	25	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	25	25	25	20
Very Active	≥ S3 *	No	5	5	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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